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U.S. ENERGY SECURITY POLICY AND PERSPECTIVES

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IT IS A PLEASURE TO PARTICIPATE IN THIS FIRST MEETING OF THE OIL AND GAS INDUSTRY FORUM. THIS FORUM HAD ITS ORIGIN IN THE COMMON INTEREST OF OUR TWO COUNTRIES AND OUR TWO INDUSTRIES IN ENHANCING BILATERAL COOPERATION ON STRATEGIC ENERGY ISSUES. THAT INTEREST IS DEMONSTRATED BY A BROAD RANGE OF COOPERATION BETWEEN OUR TWO COUNTRIES ACROSS ENERGY SECTORS, BY THE ACTIVE PARTICIPATION OF U.S. INDUSTRY IN THE CHINESE ENERGY MARKET, AND BY THE COMMITMENT OF OUR MINISTRIES AND LEADERS TO ENHANCING AND STRENGTHENING OPPORTUNITIES FOR COOPERATION. THE U.S.-CHINA ENERGY AND ENVIRONMENTAL COOPERATION INITIATIVE, SIGNED AT MINISTERIAL LEVEL BY THE STATE DEVELOPMENT PLANNING COMMISSION AND THE U.S. DEPARTMENT OF ENERGY IN OCTOBER OF 1997 DEMONSTRATES THAT COMMITMENT.

THE OIL AND GAS INDUSTRY FORUM IS ONE IMPORTANT STEP TO ADVANCING THE GOALS OF THE ENERGY AND ENVIRONMENT COOPERATION INITIATIVE TO STRENGTHEN COOPERATION, ENCOURAGE GREATER USE AND DEPLOYMENT OF ADVANCED TECHNOLOGIES, AND SEEK WAYS TO ENHANCE THE ROLE OF THE PRIVATE SECTOR IN CHINA'S ENERGY DEVELOPMENT. OUR LEADERS ARE TAKING NOTE OF OUR EFFORTS AND THEY WILL TAKE NOTE OF OUR PROGRESS. THE FORMATION OF THE OIL AND GAS INDUSTRY FORUM WAS CITED BY THE UNITED STATES AS AN ACHIEVEMENT OF THE JUNE 1998 SUMMIT MEETING BETWEEN PRESIDENT CLINTON AND PRESIDENT JIANG ZEMIN.

ALL OF YOU WHO WORKED SO DILIGENTLY TO REACH AGREEMENT ON THE TERMS FOR THE FORUM AND ORGANIZE THIS FIRST MEETING CAN TAKE PRIDE IN ADVANCING THE COOPERATIVE GOALS OF OUR TWO NATIONS. IN THE NEXT TWO DAYS WE HAVE THE OPPORTUNITY TO EXCHANGE INFORMATION ON POLICY AND RESTRUCTURING IN OUR ENERGY AND PETROLEUM MARKETS, TO DEFINE POTENTIAL NEW OPPORTUNITIES FOR THE U.S. PRIVATE SECTOR IN CHINA'S PETROLEUM DEVELOPMENT AND TO IDENTIFY THE KEY STRATEGIC

AND TECHNICAL ISSUES TO FOCUS OUR COLLABORATIVE EFFORTS UNDER THIS FORUM. IN THE FUTURE.

I WOULD LIKE TO FOCUS MY REMARKS ON THREE ISSUES: U.S. ENERGY POLICIES AND STRATEGIES, WITH A FOCUS ON ELECTRICITY, OIL AND GAS ; THE GLOBAL CONTEXT FOR U.S. ENERGY STRATEGY; AND THE LINKAGE BETWEEN U.S. ENERGY SECURITY AND ENVIRONMENTAL GOALS, WITH ATTENTION TO HOW GREATER USE OF NATURAL GAS CAN ADVANCE BOTH.

THE BASIC PRINCIPLES OF U.S. ENERGY POLICY ARE DESCRIBED IN THE "COMPREHENSIVE NATIONAL ENERGY STRATEGY", RELEASED BY THE DEPARTMENT IN APRIL 1998. THE SUBMISSION OF THIS PLAN IS A REQUIREMENT OF OUR CONGRESS. THE PLAN ITSELF IS CONSTANTLY BEING IMPLEMENTED THROUGH NEW INITIATIVES, NEW REGULATIONS AND NEW LEGISLATIVE PROPOSALS.

U.S. ENERGY STRATEGY IS BUILT ON SEVERAL IMPORTANT CONSIDERATIONS:

FIRST, BECAUSE ENERGY IS A KEY FACTOR IN OUR ECONOMIC COMPETITIVENESS AND PROSPERITY, THE U.S. SEEKS TO PROVIDE RELIABLE AND AFFORDABLE ENERGY SUPPLIES TO U.S. ENERGY CONSUMERS. CONSIDER THAT U.S. ANNUAL EXPENDITURES FOR ENERGY NOW EXCEED \$500 BILLION ANNUALLY, ACCOUNTING FOR OVER 7.5% OF OUR GROSS DOMESTIC PRODUCT. THE ANNUAL ELECTRICITY BILL FOR U.S. CONSUMERS IS ROUGHLY \$200 BILLION DUE TO THE RAPID DEVELOPMENT OF ENERGY EFFICIENT TECHNOLOGIES AND PRACTICES IN THE U.S. AND THE RESTRUCTURING OF OUR INDUSTRIAL SECTOR, THE UNITED STATES DECREASED ITS ENERGY USE PER DOLLAR OF GROSS DOMESTIC PRODUCT BY NEARLY 30 PERCENT SINCE 1975, IN ESSENCE REPRESENTING AN ANNUAL ENERGY SAVINGS OF OVER \$170 BILLION. WE WANT TO CONTINUE THIS MOMENTUM IN THE FUTURE TO ENSURE THAT ENERGY IS A BOON RATHER THAN A DRAG OF OUR ECONOMIC GOALS.

SECOND, WE RECOGNIZE THAT ENERGY IS A GLOBAL COMMODITY AND THAT GLOBAL ENERGY MARKETS ARE INCREASINGLY INTEGRATED. AS WE LEARNED FROM THE ENERGY DISRUPTIONS OF THE 1970S, THE PRICE AND AVAILABILITY OF ENERGY RESOURCES IN ONE REGION CAN HAVE SERIOUS GLOBAL REPERCUSSIONS ON OTHER ECONOMIES. AND ENERGY REFORMS, SUCH AS THE REMOVAL OF PRICE CONTROLS, THE ELIMINATION OF MANY TRADE BARRIERS, THE MOVE TO RESTRUCTURE AND PRIVATIZE ENERGY SYSTEMS AND INCREASED OPENNESS TO FOREIGN INVESTMENT - ALL AGAINST A BACKDROP OF SUBSTANTIAL AND GROWING ENERGY INVESTMENT REQUIREMENTS WORLDWIDE -- HAVE CONTRIBUTED TO INCREASED INTEGRATION OF WORLD ENERGY MARKETS. CONSIDER THAT THE GLOBAL MARKET FOR ENERGY SUPPLY EQUIPMENT IS NOW APPROXIMATELY \$300 BILLION ANNUALLY AND INCREASING. IF WE INCLUDE THE VALUE OF PRODUCTS WHICH DEPEND ON ENERGY PERFORMANCE, SUCH AS CARS AND APPLIANCES, THE GLOBAL

ENERGY MARKET REACHES INTO THE TRILLIONS OF DOLLARS. AND ENERGY INVESTMENTS NEEDED TO FUEL THE WORLD'S EXPECTED ENERGY EXPANSION ARE HUGE. DOE'S ENERGY INFORMATION ADMINISTRATION ESTIMATES THAT CUMULATIVE WORLDWIDE ELECTRIC POWER INVESTMENTS BETWEEN 1995 AND THE YEAR 2010 WILL BE \$2.2 TRILLION. AND THIS DOES NOT INCLUDE INVESTMENTS IN OTHER SECTORS WHICH COULD ADD TRILLIONS MORE IN INVESTMENT NEEDS. ATTRACTING AND STIMULATING THIS PRIVATE SECTOR INVESTMENT WILL REQUIRE CONTINUED AND INTENSIFIED EFFORTS WORLDWIDE TO PROVIDE THE APPROPRIATE POLICY AND INVESTMENT CLIMATE.

THIRD, ENERGY IS THE KEY TO OUR ENVIRONMENTAL HEALTH AND SECURITY. ENERGY NOT ONLY CONTRIBUTES OVER 80% OF THE GREENHOUSE GASES AT THE ROOT OF CONCERNS OVER GLOBAL WARMING, IT ALSO IS A MAJOR SOURCE OF POLLUTANTS CONTRIBUTING TO LOCAL AND REGIONAL ENVIRONMENTAL CONCERNS. THE U.S. IS ADDRESSING THESE PROBLEMS ON ALL FRONTS. OVER 5,000 U.S. ORGANIZATIONS ARE NOW PARTICIPATING IN THE U.S. CLIMATE CHANGE ACTION PLAN. AND THE PRESIDENT HAS PROPOSED A NEW 5-YEAR, \$6.3 BILLION INITIATIVE OF TAX CUTS AND RESEARCH AND DEVELOPMENT SPENDING TO ENCOURAGE TECHNOLOGY INNOVATION, RENEWABLE ENERGY, FUEL-EFFICIENT CARS, AND ENERGY-EFFICIENT HOMES. AND WE ARE MAKING SUBSTANTIAL PROGRESS IN REDUCING LOCAL POLLUTANTS. THE U.S. BEGAN IMPLEMENTING PHASE 1 OF OUR REVISED CLEAN AIR ACT IN 1995. SINCE THEN, SULFUR DIOXIDE EMISSIONS HAVE DECLINED BY ALMOST 40% BELOW THEIR REQUIRED LEVEL. MARKET DEREGULATION AND RESTRUCTURING IS ALSO SPURRING THE USE OF NATURAL GAS AND OTHER CLEAN BURNING FUELS IN THE U.S. ENERGY MARKET. NATURAL GAS USE IN THE UNITED STATES HAS INCREASED BY OVER 20% IN THE LAST FIVE YEARS, AND IS EXPECTED TO BE 50% HIGHER BY THE YEAR 2020. GAS ALREADY REPRESENTS NEARLY 25% OF THE U.S. ENERGY MIX. WORLDWIDE, WE EXPECT NATURAL GAS TO BE THE FASTEST-GROWING ENERGY SOURCE OVER THE NEXT 25 YEARS, WHEN WORLDWIDE GAS CONSUMPTION COULD BE MORE THAN DOUBLE THE 1995 LEVEL.

FINALLY AND A KEY ISSUE IS CONTINUED CONCERN OVER GROWING OIL USE AND IMPORT DEPENDENCE POINT TO THE NEED TO DIVERSIFY OIL IMPORT SOURCES, MAINTAIN A STRONG EMERGENCY RESPONSE CAPABILITY AND APPLY OUR TECHNOLOGY ADVANCES TO REDUCING THE COST AND SLOWING THE DECLINE IN DOMESTIC OIL PRODUCTION. THE UNITED STATES IS THE WORLD'S LARGEST OIL CONSUMER AND PRODUCER AND, INDEED, THE SECOND LARGEST PRODUCER OF OIL (INCLUDING NGLS AND OTHER FUELS) AFTER SAUDI ARABIA. THE U.S. IS ALSO ONE OF THE LARGEST OIL IMPORTING COUNTRIES. WE ALREADY DEPEND ON IMPORTS FOR 50% OF OUR OIL NEEDS AND THIS DEPENDENCE COULD RISE TO 60% BY THE YEAR 2010. THE U.S. HAS A WELL

DIVERSIFIED IMPORT MIX AND WE ARE SEEKING TO RETAIN THIS DIVERSITY BY ENCOURAGING DEVELOPMENT OF STRATEGIC WORLD OIL SUPPLIES. BECAUSE THE U.S. IS ALSO A HIGHLY MATURE PRODUCING PROVINCE, WE ARE ALSO PROMOTING AND APPLYING ADVANCED TECHNOLOGIES FOR FINDING AND PRODUCING OIL. THESE ADVANCES HAVE ALREADY HAD MEASURABLE EFFECTS IN THE UNITED STATES. THEY HAVE (ACCORDING TO THE RECENT IEA ENERGY POLICY REVIEW OF THE UNITED STATES), "...UNLOCK(ED) THE SURPRISINGLY LARGE RESOURCES OF THE DEEPWATER GULF OF MEXICO,.. INCREASED RECOVERY RATES... PROLONGED THE LIVES OF A VAST NUMBER OF OLD, MARGINAL FIELDS IN THE U.S... AND OPENED THE ARCTIC RESOURCES IN ALASKA TO VIABLE AND SOUND PRODUCTION... (MOREOVER)... APPLICATION OF TECHNOLOGY HAS BEEN ABLE TO LOWER COSTS SUFFICIENTLY TO PRESERVE MUCH OF U.S. MARGINAL PRODUCTION DURING THE PERIOD OF STAGNANT OIL PRICES BETWEEN THE MID-1980S AND THE MID-1990s....." IN FACT, U.S. TECHNOLOGY HAS REDUCED FINDING COSTS FOR OIL FROM \$16 PER BARREL IN 1979 TO \$4.60 TODAY. AND, IN THE EVENT THAT IN SPITE OF OUR OWN BEST EFFORTS TO MAINTAIN STABLE AND SECURE GLOBAL ENERGY MARKETS, WE ARE FACED WITH ANOTHER MAJOR OIL SUPPLY DISRUPTION, THE U.S. HAS OVER 560 MILLION BARRELS IN OUR STRATEGIC PETROLEUM RESERVE AND A DEFINED POLICY FOR USING THAT RESOURCE.

AGAINST THIS BACKDROP, WHAT ARE THE ELEMENTS OF U.S. ENERGY STRATEGY? I THINK YOU WILL FIND THAT THE FOLLOWING KEY GOALS ARE STRIKINGLY SIMILAR TO MANY OF THE GOALS EMBRACED IN CHINA'S OWN SOCIAL AND ECONOMIC DEVELOPMENT PLAN AND LONG-TERM GOALS. THIS COINCIDENCE OF GOALS IS, I BELIEVE, ONE MORE INDICATION OF THE GLOBALIZATION OF ENERGY MARKETS, ISSUES AND CONCERNS AND A GROWING CONVERGENCE IN THE KEY RESPONSES COUNTRIES ARE PURSUING TO ADDRESS THEM. WE AIM TO:

- IMPROVE THE EFFICIENCY OF OUR ENERGY SYSTEM IN ALL SECTORS INCLUDING USE BY OUR OWN FEDERAL GOVERNMENT;
- ENSURE AGAINST ENERGY DISRUPTIONS BY STABILIZING OUR OWN DOMESTIC PRODUCTION, REDUCING OUR CONSUMPTION, DIVERSIFYING OUR IMPORTS AND ENSURING A STRONG EMERGENCY RESPONSE CAPABILITY;
- PROMOTE ENERGY PRODUCTION AND USE IN WAYS THAT PROTECT HEALTH AND THE ENVIRONMENT, BY INCREASING DOMESTIC GAS PRODUCTION, RECOVERING OIL WITH LESS ENVIRONMENTAL IMPACT, DEVELOPING RENEWABLE TECHNOLOGIES, AND MAINTAINING A VIABLE NUCLEAR OPTION;

- EXPAND FUTURE ENERGY CHOICES THROUGH CONTINUED PROGRESS IN SCIENCE AND TECHNOLOGY THAT EXPAND LONG-TERM ENERGY OPTIONS;
- AND DEVELOP COOPERATIVE GLOBAL APPROACHES TO ECONOMIC, ENERGY SECURITY AND ENVIRONMENTAL CONCERNS BY COOPERATING INTERNATIONAL WITH OUR STRATEGIC PARTNERS SUCH AS CHINA IN BILATERAL AND MULTILATERAL INITIATIVES.

I WOULD LIKE TO REVIEW A FEW AREAS WHERE WE ARE PUTTING THESE GOALS INTO ACTION.

ELECTRICITY RESTRUCTURING AND COMPETITION. SINCE THE UNITED STATES IS THE WORLD'S LARGEST PRODUCER OF ELECTRICITY AND STILL 50% DEPENDENT ON COAL IN THIS SECTOR, THIS IS A MAJOR FOCUS OF OUR EFFORTS. WE ARE CONTINUING TO *PROMOTE THE ESTABLISHMENT OF A COMPETITIVE ELECTRIC SYSTEM WITH GREATER EFFICIENCY AND GREATER OPPORTUNITIES FOR USE OF ALTERNATIVE ENERGY.* TO THIS END, WE HAVE DEVELOPED A COMPREHENSIVE ELECTRICITY COMPETITION PLAN. THE PLAN PROVIDES CLEAR FEDERAL SUPPORT AND GUIDELINES FOR ENHANCED RETAIL AND WHOLESALE COMPETITION IN THE ELECTRICITY INDUSTRY. IT PROVIDES SUPPORT FOR ENHANCED EFFICIENCY AND GREATER USE OF RENEWABLE ENERGY, IT ENHANCES SYSTEM RELIABILITY, AND IT CLARIFIES THE AUTHORITIES BETWEEN THE FEDERAL AND STATE GOVERNMENTS WITH RESPECT TO THE ELECTRICITY INDUSTRY. WE EXPECT THAT THE PLAN WILL REDUCE OUR NATION'S ELECTRICITY BILL BY AT LEAST 10 PERCENT OR \$10 BILLION ANNUALLY, REDUCE CARBON EMISSIONS BY 25-40 MILLION TONS, AND DOUBLE THE EXPECTED USE OF NONHYDRO RENEWABLE ENERGY SOURCES IN THIS SECTOR BY THE YEAR 2010. ALREADY, OVER 10 U.S. STATES HAVE ENACTED LEGISLATION TO ENHANCE RETAIL COMPETITION AND THE STATE OF CALIFORNIA, EFFECTIVE IN MARCH OF 1998, ALLOWED FREE CHOICE OF ELECTRICITY SUPPLIERS FOR ALL CONSUMER CLASSES.

WE ARE PROMOTING R&D TO DEMONSTRATE COST-EFFECTIVE POWER SYSTEMS THAT WE EXPECT WILL ACHIEVE ELECTRICAL GENERATING EFFICIENCIES GREATER THAN 60% USING COAL, COMPARED TO 35% TODAY, AND 70% USING NATURAL GAS, COMPARED TO 50% NOW.

U.S. Energy Strategy at a Glance

Goal 1. Improve the efficiency of the energy system -- making more productive use of energy resources to enhance overall economic performance while protecting the environment and advancing national security:

- Objective 1.* Support competitive and efficient electric systems.
Enact electric utility restructuring legislation, develop advanced coal/gas powerplants, improve existing nuclear power plants
- Objective 2.* Significantly increase energy efficiency in transportation, industrial and buildings sector by the year 2010.
Develop more efficient transportation, industrial and building technologies.
- Objective 3.* Increase the efficiency of Federal energy use.
Adopt new/innovative energy efficient and renewable energy technologies.

Goal II. Ensure against energy disruptions -- protecting our economy from external threat of interrupted supplies of infrastructure failure.

- Objective 1.* Reduce the vulnerability of the U.S. economy to disruptions in oil supply.
Stabilize domestic production, maintain readiness of Strategic Petroleum Reserve, diversify import sources, reduce consumption.
- Objective 2.* Ensure energy system reliability, flexibility and energy response capability.
Ensure reliable electricity/gas supply, refining and emergency response.

Goal III. Promote energy production and use in ways that respect health and environmental values -- improving our health and local, regional, and global environmental quality.

- Objective 1.* Increase domestic energy production in an environmentally responsible manner.
Increase domestic gas production, recover oil with less environmental impact, develop renewable technologies, maintain viable nuclear option.
- Objective 2.* Accelerate the development and market adoption of environmentally friendly technologies
Increase near-term deployment, expand voluntary efforts, design domestic greenhouse gas trading program, work with developing countries, design international trading/credit system

Goal IV. Expand future energy choices -- pursuing continued progress in science and technology to provide future generations with a robust portfolio of clean and reasonably priced energy sources.

- Objective 1.* Maintain a strong national knowledge base as a foundation for informed energy decisions, new energy systems, and enabling technologies of the future.
Pursue basic research, including research on carbon/climate; support energy science infrastructure
- Objective 2.* Develop technologies that expand long-term energy options
Develop long-term options, such as fusion, hydrogen-based systems, and methane hydrates, that can have major impacts

Goal V. Cooperate internationally on global issues -- developing the means to address global economic, security and environmental concerns.

- Objective 1.* Promote development of open, competitive international energy markets, and facilitate the adoption of clean, safe, and efficient energy systems.
Encourage adoption of favorable legal/policy framework in other countries, promote clean/efficient energy systems and science/technology collaboration
- Objective 2.* Promote foreign regional stability by reducing energy-related environmental risks in areas of U.S. security interest.
Prioritize concerns and develop cost-effective solutions

ELECTRICITY RESTRUCTURING AND COMPETITION IS A GLOBAL ENERGY TREND. WORLDWIDE, ELECTRICITY IS AND WILL CONTINUE TO BE THE FASTEST GROWING COMPONENT OF ENERGY DEMAND. WORLD ELECTRICITY DEMAND IS EXPECTED TO NEARLY DOUBLE BY THE YEAR 2020, WITH NEARLY 60% OF THIS INCREASE IN THE DEVELOPING COUNTRIES OF ASIA. THIS IS EXPECTED TO OCCUR AT A COST OF OVER \$2 TRILLION -- \$1 TRILLION IN THESE DEVELOPING ASIAN ECONOMIES ALONE. FACING THESE EXPANSION NEEDS, MANY

COUNTRIES INCLUDING CHINA ARE MOVING TO PRIVATIZE GOVERNMENT ENTITIES, OPEN ENTRY FOR NEW ENTERPRISES, AND LOWER THE COSTS AND IMPROVE THE AVAILABILITY OF ENERGY SERVICES". THESE EFFORTS WILL HAVE SEVERAL BENEFITS -- THEY WILL ACCELERATE THE FLOW OF CAPITAL INVESTMENTS AND SPUR THE DEVELOPMENT OF INDEPENDENT POWER AND ALTERNATIVE ENERGY SOURCES.

Cumulative Projected Worldwide Electric Power Investments by Region: 1995 to 2010		
	Total:	% Share of Total
North America	\$ 231	10.1
Latin America	\$ 202	8.9
Western Europe	\$ 333	14.6
Asia:	\$ 984	43.2
China	\$ 467	20.5
East Asia	\$ 275	12.1
South Asia	\$ 242	10.6
OECD Pacific	\$ 167	7.3
FSU	\$ 156	6.8
Other	\$ 206	9.0
TOTAL	\$2, 279	100.0

OIL PRODUCTION AND DIVERSIFICATION. IN THE OIL SECTOR, U.S. GOALS ARE TO STABILIZE DOMESTIC PRODUCTION, REDUCE CONSUMPTION AND DIVERSIFY U.S. OIL IMPORTS AND GLOBAL OIL SOURCES. U.S. EFFORTS IN THESE AREAS ARE INTENSIFIED BY THE UPTURN IN OIL CONSUMPTION AND IMPORTS SINCE THE EARLY 1990s IN RESPONSE TO DECLINING OIL PRICES. WORLD DEMAND FOR OIL HAS RISEN BY OVER 7 MILLION BARRELS PER DAY SINCE 1993 AND PROJECTIONS BY DOE'S ENERGY INFORMATION ADMINISTRATION ARE THAT WORLD OIL DEMAND COULD INCREASE BY AROUND 45 MILLION BARRELS PER DAY BY THE YEAR 2020. NEARLY 40% OF THIS INCREASE WILL BE IN THE DEVELOPING ECONOMIES OF ASIA. THE SAME PROJECTIONS INDICATE THAT ABOUT THREE-FOURTHS OF THIS INCREASE IN DEMAND WILL BE MET BY INCREASES IN PRODUCTION BY MEMBERS OF OPEC RATHER THAN NON-OPEC SUPPLIERS, IN SPITE OF A NEARLY 12 MILLION BARREL PER DAY INCREASE IN NON-OPEC AREAS. WHAT IS THE U.S. DOING IN RESPONSE?

- WE ARE STRIVING TO STOP THE DECLINE IN OUR OWN DOMESTIC OIL PRODUCTION BY THE YEAR 2005. THE U.S. IS SEEKING TO DEVELOP IMPROVED RESERVOIR IMAGING TECHNOLOGIES TO LOCATE OIL IN DEEPER AND MORE COMPLEX RESERVOIRS, ADVANCED EXTRACTION TECHNOLOGIES TO BOOST RECOVERY FROM MATURE RESERVOIRS AND ENVIRONMENTAL TECHNOLOGIES TO REDUCE THE COST OF REGULATORY COMPLIANCE. ALREADY, NEW 4-D SEISMIC TECHNOLOGY HAS LED TO THE DISCOVERY OF 2 MILLION BARRELS OF ADDITIONAL OIL IN THE GULF OF MEXICO, AND EXPERTS EXPECT THAT THIS NEW SEISMIC TOOL WILL INCREASE THE AMOUNT OF U.S. OIL AND GAS ULTIMATELY RECOVERABLE BY AS MUCH AS 7-10 PERCENT. ALREADY, TECHNOLOGY ADVANCES HAVE REDUCED THE FINDING COSTS FOR OIL FROM \$16 PER BARREL IN 1979 TO \$4.60. WE ESTIMATE THAT THE DEVELOPMENT AND USE OF ADVANCED EXPLORATION AND RECOVERY TECHNOLOGIES CAN RESULT IN MORE THAN 400 MILLION BARRELS OF ADDITIONAL CUMULATIVE OIL PRODUCTION BETWEEN NOW AND THE YEAR 2005. WE HAVE ALSO LIFTED TRADE RESTRICTIONS ON U.S. CRUDE OIL AND ARE PUTTING MORE FEDERALLY OWNED PRODUCTION INTO THE HANDS OF THE PRIVATE SECTOR. FOR INSTANCE, THE U.S. LIFTED THE BAN ON EXPORTING ALASKAN NORTH SLOPE OIL, WHICH IS SERVING BOTH TO EXTEND THE LIFE OF THE FIELD AND SIMULATE PRODUCTION IN CALIFORNIA AS WELL. AND WE HAVE PRIVATIZED THE ELK HILLS PETROLEUM RESERVE WITH PROCEEDS OF \$3.7 BILLION, THE LARGEST PRIVATIZATION IN U.S. HISTORY.
- WE ARE HOPING TO ALSO DEVELOP TECHNOLOGY OPTIONS WHICH WILL HELP US REDUCE EXPECTED U.S. OIL CONSUMPTION BY AS LEAST ONE MILLION BARRELS PER DAY BY THE YEAR 2010. THE U.S. TRANSPORTATION SECTOR ACCOUNTS FOR TWO-THIRDS OF THE NATION'S ANNUAL OIL CONSUMPTION AND IS A MAJOR FOCUS OF OUR EFFORTS. THE U.S. ALREADY HAS IN PLACE CORPORATE AVERAGE FUEL ECONOMY STANDARDS FOR PASSENGER CARS AND LIGHT TRUCKS. WE ARE HOPING TO GREATLY ENHANCE THE EFFICIENCY OF THESE VEHICLES. FOR THIS REASON, THE UNITED STATES GOVERNMENT IS WORKING IN PARTNERSHIP WITH INDUSTRY FOR A NEW GENERATION OF VEHICLES. THAT WOULD GET UP TO THREE TIMES THE FUEL EFFICIENCY OF TODAY'S CARS, OR ABOUT 80 MILES PER GALLON. AND WE ARE PROMOTING TECHNOLOGIES TO PROVIDE INCREASED PRODUCTION OF TRANSPORTATION FUELS FROM BIOMASS AND NATURAL GAS, AND INCREASED USE OF MORE EFFICIENT MASS TRANSPORTATION SYSTEMS.
- INTERNATIONALLY, WE ARE WORKING WITH U.S. INDUSTRY TO DIVERSIFY SOURCES OF OIL AVAILABLE IN WORLD MARKETS. THIS IS INDEED A KEY IMPETUS BEHIND THE FORMATION OF THIS OIL AND GAS

INDUSTRY FORUM -- TO BRING OUR INDUSTRY TO THE TABLE IN SUPPORT OF CHINA'S GOAL TO EXPAND ITS OWN DOMESTIC PETROLEUM POTENTIAL. WE ARE ALSO STRIVING, AS IS CHINA, TO PROMOTE DEVELOP PRODUCTION IN OVERSEAS MARKETS, SUCH AS THE CASPIAN. PROVEN RESERVES IN THE CASPIAN ARE ESTIMATED AT 15 TO 29 BILLION BARRELS OF OIL - COMPARABLE TO NORTH SEA RESERVES. IT IS POSSIBLE THAT 163 BILLION ADDITIONAL BARRELS - ROUGHLY EQUIVALENT TO A QUARTER OF THE MIDDLE EAST RESERVES -- REMAIN TO BE DISCOVERED. COUNSELOR KALICKI WILL ADDRESS IN MORE DETAIL THE U.S. STRATEGIC APPROACH TO HELP BRING THIS POTENTIAL TO THE MARKET.

EXPANDING THE USE OF NATURAL GAS. A MAJOR GOAL OF U.S. ENERGY STRATEGY IS TO PROMOTE ENERGY PRODUCTION AND USE IN A WAY THAT PROTECTS HEALTH AND THE ENVIRONMENT. GREATER USE OF NATURAL GAS CAN HELP US ACHIEVE THAT GOAL, AND ALSO ADVANCE OUR ENERGY DIVERSIFICATION EFFORTS. AND IT IS. ACCORDING TO DOE'S ENERGY INFORMATION ADMINISTRATION, NATURAL GAS IS EXPECTED TO BE THE FASTEST-GROWING PRIMARY ENERGY SOURCE IN BOTH THE U.S. AND THE WORLD OVER THE NEXT TWENTY-FIVE YEARS. BY THE YEAR 2020, WE PROJECT THAT THE WORLD'S CONSUMPTION OF NATURAL GAS COULD EQUAL 172 TRILLION CUBIC FEET, MORE THAN DOUBLE THE 1995 LEVEL. MUCH OF THIS GROWTH IS EXPECTED TO FUEL ELECTRICITY GENERATION WORLDWIDE. IN THE UNITED STATES, WE ARE SUPPORTING POLICIES AIMED AT ALLOWING DOMESTIC NATURAL GAS SUPPLY TO GROW BY AS MUCH AS 6 TRILLION CUBIC FEET BY THE YEAR 2010. NATURAL GAS TECHNOLOGIES ARE ALREADY

THE MOST ECONOMIC FOSSIL-FUEL BASED TECHNOLOGIES FOR NEW CAPACITY IN U.S. ELECTRICITY GENERATION. NATURAL GAS ALREADY ACCOUNTS FOR NEARLY 25% OF U.S. ENERGY DEMAND. IT HAS BEEN GROWTH IN AT A STEADY RATE OF 3% PER YEAR SINCE THE EARLY 1990s. A MAJOR IMPETUS TO GREATER GAS USE IN THE UNITED STATES HAVE BEEN DEREGULATION OF MAJOR ASPECTS OF THE NATURAL GAS MARKET. DEREGULATION OF PRICES HELPED SPUR GREATER MARKET DEMAND FOR NATURAL GAS AND DEVELOPMENT OF NATURAL GAS, AND ENHANCED WHOLESALE COMPETITION HELPED IMPROVE PLANNING AND EFFICIENCIES IN THE GAS INDUSTRY. SOME OF THE MILESTONES IN DEREGULATION OF THE GAS INDUSTRY, RECENTLY REPORTED IN A CRITIQUE BY THE INTERNATIONAL ENERGY AGENCY OF U.S. ENERGY POLICY ARE ILLUSTRATED BELOW:

Developments in U.S. Gas Market Competition

1978 The Natural Gas Policy Act ended federal regulation of wellhead prices for "new" gas as of 1 January 1985. However, it kept in place wellhead price controls for older vintage of gas.

1985 Order 436, issued by the Federal Energy Regulatory commission (FERC), established a voluntary program that allowed direct purchases by consumers from producers. It encouraged pipeline companies to provide open access to their competitors. The order begins the separation of pipelines' merchant and transportation functions and initiates regulatory reform in the gas business.

1989 The Natural Gas Wellhead Decontrol Act lifts all remaining wellhead price controls. It is fully implemented by 1993.

1992 The FERC Order 636 obligates interstate pipeline companies to unbundle their transportation, storage, back-up and marketing functions. Order 636 aims to establish open, non-discriminatory access to the pipeline infrastructure for all gas suppliers.

1995 The first residential natural gas customer-choice programs are implemented. By the end of 1997, local gas utilities in more than 20 states and the District of Columbia proposed or implemented residential consumer-choice of pilot programs.

Source. International Energy Agency, "The United States, 1998 Review", Paris 1998

Highlights of Recommendations in the APEC Natural Gas Initiative

- Establish stable, transparent, independently administered, predictable and non-discriminatory legal, fiscal, regulatory and trade regimes.
- Permit private (domestic and foreign) ownership of natural gas facilities
- Define and protect the property rights of private investors/operators in natural gas facilities.
- Ensure the sanctity of contracts between participants in the natural gas sector.
- Increase, to the maximum extent possible, private and commercial entities involvement in the provision of natural gas and natural gas-related products and services.
- Promote the establishment of an autonomous regulator in order to provide certainty to investors.
- Aim for non-discriminatory treatment of foreign and domestic companies.
- Establish stable, transparent and non-discriminatory project approval processes.
- Recognize that in the longer term incorporating full costs and benefits associated with energy projects will help promote sustainable development and acknowledge that this should be further examined with a view towards developing practical applications.
- Remove unnecessary barriers to natural gas utilization
- Permit required capital transfers and unrestricted repatriation of earnings.
- Foster competition between all sources of energy (including imported and domestic sources) and between energy service providers.
- Develop mechanisms to allow stable and economically robust natural gas projects access to long-term credit both within each APEC economy and internationally.
- Promote the development, deployment and dissemination of advanced natural gas technologies.
- Ensure necessary capacity in government authorities responsible for the natural gas sector.
- Permit access to exploration acreage on a non-discriminatory basis, in particular, between domestic and foreign companies.
- Permit access to spare capacity in upstream natural gas facilities (for example, processing and gathering) on a non-discriminatory basis, including between domestic and foreign companies.
- Permit production sharing agreements or other ownership mechanisms to permit private (domestic and foreign) company participation in the production sector.
- Provide favorable conditions for investors in upstream sector.
- Permit recovery of and return on investment in natural gas infrastructure projects.
- Establish transparent and non-discriminatory procedures for obtaining licenses/authorizations to construct and operate natural gas infrastructure projects.
- Establish transparent and non-discriminatory procedures for project sponsors to obtain appropriate eminent domain (exploration of land), siting and right-of-way approvals.
- Establish health and safety standards for the construction and operation of natural gas infrastructure consistent with the highest international standards.
- Ensure that insurance required to facilitate financing can be met in a timely and cost-effective manner

CHINA HAS AMBITIOUS PLANS TO INCREASE ITS OWN PRODUCTION AND USE OF NATURAL GAS. ACCORDING TO A REPORT BY OUR ENERGY INFORMATION ADMINISTRATION, CHINA'S GOAL IN ITS NINTH FIVE-YEAR SOCIAL AND ECONOMIC DEVELOPMENT PLAN IS TO BOOST NATURAL GAS RESERVES BY 17.7 TRILLION CUBIC FEET BY THE YEAR 2000, TO INCREASE NATURAL GAS PRODUCTION TO 833 BILLION CUBIC FEET PER DAY, AND TO ENCOURAGE 70% OF CHINESE HOUSEHOLDS TO USE GAS FUEL BY THE YEAR 2000. CHINA IS ALREADY EXPANDING ITS INFRASTRUCTURE TO BRING MORE GAS TO KEY MARKETS, SUCH AS THE COMPLETION OF THE GAS PIPELINE PROJECT FROM SHAANXI PROVINCE TO BEIJING.

CHINA AND THE UNITED STATES ARE NOT ALONE IN THEIR EXPANSION EFFORTS. WORLDWIDE, PLENTIFUL RESERVES OF GAS, COMBINED WITH DEREGULATION OF GAS MARKETS, RESTRUCTURING OF THE ELECTRIC POWER SECTOR, AND GOVERNMENT ENCOURAGEMENT OF GAS USE TO REDRESS ENVIRONMENTAL CONCERNS ARE DRIVING A STEADY INCREASE IN GAS USE. AND GOVERNMENTS ARE COMBINING THEIR EFFORTS AND RESOLVE TO PROVIDE THE RIGHT FRAMEWORK FOR GAS INVESTMENTS AND INFRASTRUCTURE. AT THE RECENT MEETING OF ENERGY MINISTERS OF THE ASIA PACIFIC ECONOMIC CONFERENCE IN OKINAWA ON OCTOBER 9. SECRETARY RICHARDSON, MINISTER BAO AND OTHER MINISTERS ENDORSED AN INITIATIVE ON "ACCELERATING INVESTMENT IN NATURAL GAS SUPPLIES, INFRASTRUCTURE AND TRADING NETWORKS IN THE APEC REGION." THE INITIATIVE WAS PREPARED IN RESPONSE TO A REQUEST FROM APEC ENERGY MINISTERS AT THEIR SECOND MEETING IN EDMONTON IN 1997 AND IN CLOSE COOPERATION WITH INDUSTRY. IT IS PART OF THE EFFORT BY MINISTERS TO ADVANCE ACTIONS THAT PROMOTE INVESTOR CONFIDENCE AND MOBILIZE THE PRIVATE CAPITAL THAT WILL BE NEEDED FOR INFRASTRUCTURE DEVELOPMENT IN THE REGION.

AMONG THE POLICIES RECOMMENDED IN THE INITIATIVE ARE:

- PERMITTING PRIVATE OWNERSHIP OF NATURAL GAS FACILITIES;
- ENSURING SANCTITY OF CONTRACTS;
- ESTABLISHING AUTONOMOUS REGULATORS;
- PROMOTING NON-DISCRIMINATORY TREATMENT OF FOREIGN AND DOMESTIC COMPANIES,
- FOSTERING COMPETITION BETWEEN ALL SOURCES OF ENERGY; AND
- SUPPORTING THE FREE FLOW OF EXPORTS AND IMPORTS OF NATURAL

GAS AND NATURAL GAS RELATED PRODUCTS AND SERVICES ACROSS BORDERS.

MINISTERS ALSO RECOGNIZED THAT THE GOAL OF THE INITIATIVE IS NOT JUST TO BUILD A SYSTEM OF GAS PIPELINES, BUT ALSO TO DEFINE AND DEAL WITH REGULATORY AND CROSS-BORDER ISSUES IN ORDER TO CREATE AN ENVIRONMENT TO MOBILIZE FOREIGN DIRECT INVESTMENT AND DOMESTIC SAVINGS FOR DEVELOPMENT OF THE PRIVATE GAS MARKET.

WE HAVE PROVIDED COPIES OF THE APEC GAS INITIATIVE TO PARTICIPANTS TODAY. WE BELIEVE THAT IT PROVIDES ISSUES AND RECOMMENDATIONS THAT COULD HELP STIMULATE THE DISCUSSION OF THE NATURAL GAS SECTOR IN THIS FORUM MEETING. AND IT COULD HELP IDENTIFY TECHNICAL ISSUES IN THE NATURAL GAS SECTOR THAT WHICH CAN HELP GUIDE OUR JOINT WORK IN THIS AREA AS WE DEFINE THE FUTURE FOCUS AND DIRECTION OF THE FORUM.

COOPERATE INTERNATIONALLY ON GLOBAL ISSUES. THE UNITED STATES RECOGNIZES THAT THE ENERGY MARKET IS NOW A GLOBAL MARKET. MEETING OUR ENERGY GOALS WILL DEPEND TO AN IMPORTANT DEGREE ON HOW EFFECTIVE WE ARE IN COOPERATING WITH CHINA AND OTHER COUNTRIES IN RESOLVING KEY ENERGY ISSUES, ON PROMOTING AND DEPLOYING CLEAN AND EFFICIENT ENERGY SYSTEMS, ON ADVANCING OUR ENERGY PRODUCTION GOALS EFFICIENTLY AND WITH LEAST DAMAGE TO THE ENVIRONMENT, ON PROMOTING SOUND POLICY, REGULATORY AND INVESTMENT REGIMES THAT WE HELP ATTRACT THE INVESTMENT NEEDS WHICH WE ALL FACE, AND IN COLLABORATING IN SCIENCE AND TECHNOLOGY THAT WILL EXPAND OUR LONG-TERM ENERGY OPTIONS.

OIL AND GAS IS A MAJOR AREA OF OPPORTUNITY FOR COOPERATING TO ADVANCE MUTUAL GOALS. THE UNITED STATES INDUSTRY IS ALREADY THE LARGEST FOREIGN INVESTOR IN CHINA'S PETROLEUM SECTOR, HAVING INVESTED OVER \$3 BILLION SINCE THIS SECTOR WAS OPEN TO FOREIGN PARTICIPATION. U.S. INDUSTRY IS EXPLORING FOR PETROLEUM BOTH ONSHORE AND OFFSHORE IN CHINA, PARTICIPATING IN THE DEVELOPMENT OF CHINA'S GAS RESERVES, HELPING BRING THESE RESOURCES TO MARKET THROUGH PARTICIPATION IN PIPELINE PROJECTS AND EXPLORING CHINA'S HUGE UNTAPPED POTENTIAL FOR COALBED METHANE RESOURCES. U.S. INDUSTRY HAS THE MOST ADVANCED PETROLEUM CAPABILITIES IN THE WORLD. U.S. INDUSTRY CAN PLAY A CONTINUED IMPORTANT ROLE AS CHINA ACCELERATES ITS EFFORTS FOR ENHANCED OIL RECOVERY, SPECIAL SERVICES FOR MATURE FIELDS, EXPANDING ITS OIL AND GAS INFRASTRUCTURE, AND INITIATING A MAJOR EXPANSION OF ITS GAS RESOURCES.

OPPORTUNITIES IN THE CHINESE MARKET AND U.S. INDUSTRY POTENTIAL ARE

THEREFORE AN IMPORTANT FOCUS OF THIS FORUM AND A MAJOR PORTION OF THE TECHNICAL DISCUSSIONS WHICH WILL BE HELD OVER THE NEXT TWO DAYS. EQUALLY IMPORTANT ARE THE INSIGHTS WHICH WE HAVE GAINED AND WILL CONTINUE TO GAIN DURING THIS FORUM OF CHINA'S RESTRUCTURING OF ITS PETROLEUM SECTOR AND OF YOUR OVERALL STRATEGIC PETROLEUM GOALS AND STRATEGIES. THERE ARE MANY OPPORTUNITIES FOR CONSULTATION AND TECHNICAL EXCHANGE. WE HOPE DURING THIS EVENT TO IDENTIFY THE MOST CRITICAL AREAS OF MUTUAL INTEREST AND TO MAKE THESE A FOCUS OF OUR FUTURE COLLABORATIONS UNDER THE OIL AND GAS INDUSTRY FORUM.